CATALYST Consortium / TAHSEEN Project

EBM: Scenario-based FP/RH Training Curriculum for Physicians

Trainer's Guide

March 2004

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Course Schedule:

Day / Hour	09.00-10.30	10.30-11.00	11.00- 13.00	13.00-13.30	13.30-15.00
Day 1	Introduction/ Pretest	Break	Module I	Break	Module I
Day 2	Module II	Break	Module II	Break	Module II
Day 3	Module III	Break	Module III	Break	Module III
Day 4	Module IV	Break	Module IV	Break	Module IV
Day 5	Module V	Break	Module V	Break	Module VI
Day 6	Module VI	Break	Module VI	Break	Closing and Post test

Evidence Based Medicine: A Program for Clinicians

INTRODUCTION:

Medical practice is changing; emphasis on the use of the best evidence derived from medical literature in guiding medical practice has become a global demand.

The foundations of this change lie in developments in clinical research over the last 30 years. In 1960, the randomized clinical trial was an oddity. It is now accepted that no drug can enter clinical practice without a demonstration of its efficacy in clinical trials. Moreover, the same randomized trial method is being applied to surgical therapies and diagnostic tests. Meta-analyses are gaining increasing acceptance as a method of summarizing the results of a number of randomized trials, and ultimately may have as profound an effect on setting treatment policy as have randomized trials themselves. Crucial methodological advances have also been made in other areas, such as the assessment of diagnostic tests and prognosis.

A new philosophy of medical practice and teaching has followed these methodological advances, this is apparent on the following observed changes:

- The profusion of articles instructing clinicians on how to access, evaluate, and interpret the medical literature.
- The proposals to apply the principles of clinical epidemiology to day-to-day clinical practice.
- Major medical journals adopting a more informative structured abstract format which incorporates issues of methods and design into the portion of an article the reader sees first.

- Journals focusing on publications of high relevance and of methodological rigor.
- Appearance of textbooks which provide a rigorous review of available evidence, including a methods section describing both the methodological criteria used to systematically evaluate the validity of the clinical evidence and the quantitative techniques used for summarizing the evidence.
- Appearance of practice guidelines based on rigorous methodological review of the available evidence.

In Egypt, the demand for the incorporation of evidence based medicine into medical practice has been demonstrated in the conferences and conventions organized by different bodies; Universities, Syndicates, Scientific groups, MOHP hospitals. Even the media, has begun to show interest in this new method of medical thinking.

RATIONALE:

The influence of evidence-based medicine on clinical practice and medical education is increasing. Clinicians are required to keep updated with current best evidence to optimize patient care outcomes. The clinician needs to learn to access, select, appraise and appropriately utilize up-to-date medical information to be able to maintain the standards of his practice. The clinician should be skilled in navigating useful internet sites, and in the use of appropriate search engines for locating current best evidence.

GOAL:

The goal of this program is to educate clinicians in the practice of evidence-based medicine. This program is designed to provide clinicians with the skills and knowledge required to bring evidence based medicine into their daily practice, by stressing upon the examination of evidence from clinical research, and de-emphasizing intuition, unsystematic clinical experience, and patho-physiologic rationale as sufficient grounds for clinical decision-making.

PROGRAM DESCRIPTION:

This is a 36 hours program which will allow clinicians to attain the knowledge and develop the skills and attitudes required as the basis for the integration of Evidence Based Medicine into their clinical practice.

LEARNING OBJECTIVES:

Evidence-based medicine requires new skills of the physician, including efficient literature-searching, and the application of formal rules of evidence in evaluating the clinical literature.

By completing this program the participating clinician is expected to achieve the following objectives:

1. Define the terms: EBM, POEMs, DOEs, and Information Mastery.
2. Describe the importance of an evidence-based approach to clinical practice.
3. Apply Information Mastery to the management of the medical literature.
4. Define the importance of clinical questions.
5. Create well-formed clinical questions.
6. List the characteristics of different study types.
7. List the type of study required to answer each clinical situation.

8. Define the Priority of different questions according to certain criteria.
9. Develop a search strategy.
10. Define the terminology and methods of searching the MEDLINE database.
11. Perform a web search.
12. Identify the web sites where relevant information may be sought.
13. Develop skill in searching for relevant literature using the internet.
14. List the different methods of reasoning used by physicians during the process of diagnosis.
15. Identify the steps of evaluating literature dealing with diagnostic techniques.
16. Calculate sensitivity and specificity, positive and negative predictive values and likelihood ratios for different diagnostic tests.
17. Use the sensitivity and specificity, positive and negative predictive values and likelihood ratios in clinical decisions.
18. Distinguish between tests that rule-in and rule-out disease.
19. Appraise literature dealing with diagnostic tests using the worksheet.
20. Identify pitfalls in common approaches to clinical decision-making.
21. Determine if a study about therapy is relevant and valid.
22. Analyze study results on an “intention to treat" basis.
23. Distinguish between “relative risk reduction” and “absolute risk reduction”.
24. Calculate the “number needed to treat” (NNT) in a study.
25. Explain the steps of performing a meta-analysis: identification, selection, abstraction, and analysis.
26. Distinguish between random and fixed effects models when reading a meta-analysis
27. Evaluate the relevance, validity and usefulness of a meta-analysis.

28. Critically appraise a simple meta-analysis.

WHO SHOULD ATTEND:

Clinicians with basic computer skills who are capable of word processing and navigating the web.

CLASS SIZE:

The class size should be designed according to the computer and internet facilities available for the program, together with the number of available instructors. One computer with internet access is required for every two participants, while one instructor for every ten participants will usually suffice.

TRAINING APPROACH:

- Participants will be trained by professional educators.
- The training will consist of self-study, classroom instruction and hands-on computer lab training.
- Competency in performance will be achieved through computer-lab training guided by worksheets.
- The worksheets will be available for participants to be used during self-study.
- Participants will receive a **Trained EBM Clinician** certificate upon completion of the training.

COURSE CONTENTS:

Module I: INTRODUCTION TO EBM		
Introduction & Pretest	*30 m*	
What is EBM?	*20 m*	
Limitations of the current practice	*30 m*	
The argument for EBM	*30 m*	
Information Mastery	*80 m*	
POEMs and DOEs	*30 m*	
Quiz	*20 m*	
Total minutes allocated to Module I:		**240 m**
Module II: Asking Clinical Questions		
Introduction & Questions asked by Clinicians at the Point of Care.	*20 m*	
Clinical Questions and Lifelong Learning.	*10 m*	
Learning to Ask a Focused Clinical Question.	*30 m*	
Steps to improve the ability to ask and answer questions	*30 m*	
Total minutes allocated to Module II:		**90 m**
Module III: Searching for the Best Evidence		
Characteristics of different types of studies.	*90 m*	
Type of study to answer type of question.	*30 m*	
Prioritizing your questions.	*30 m*	
Search strategy.	*30 m*	
Searching Medline.	*60 m*	
Using the World Wide Web.	*60 m*	
Collection of important sites	*60 m*	
Total minutes allocated to Module III:		**360 m**
Module IV: Appraising Literature : 1.Diagnosis		
Introduction & Types of reasoning	*15 m*	

Evaluating the relevance of diagnosis article.	*15 m*	
Evaluating the validity of a diagnosis article	*15 m*	
Calculating Sensitivity, specificity positive and negative predictive values and likelihood ratios	*30 m*	
Using Sensitivity, specificity positive and negative predictive values and likelihood ratios	*30 m*	
Distinguish between results that rule in and rule out diseases.	*30 m*	
Appraise literature on diagnosis using worksheet	*105 m*	
Total hours allocated to Module VI:		**240 m**
Module V: Appraising Literature : 2. Therapy		
Introduction	*30 m*	
Critically reading a paper on therapy.		
Evaluating Relevance	*15m*	
Evaluating Validity	*15 m*	
Analyze study results	*30 m*	
Relative and absolute risk reduction	*30 m*	
Worksheet for evaluating an article about Therapy & Calculating NNT	*30 m*	
Total minutes allocated to Module V:		**150 m**
Module VI: Appraising Literature : 3. Prognosis		
Formulate question relative to prognosis	*20 m*	
Understanding a cohort study	*30 m*	
Understanding case control study	*30 m*	
Evaluating the relevance of studies.	*20 m*	
Evaluating the validity of studies	*20 m*	
Appraise article dealing with prognosis	*120 m*	
Total minutes allocated to module VI:		**240 m**

Module IV: Appraising Literature : 4. Integrative studies			
Introduction.	*20 m*		
The need and the development of meta-analyses.	*40 m*		
Steps of meta-analyses.	*30 m*		
Distinguish between random and fixed effects models	*60 m*		
Evaluating the relevance validity and usefulness of a meta-analysis.	*120 m*		
Critically appraise a simple meta-analysis.	*180 m*		
Total minutes allocated to Module IV:		**450 m**	
Post test and Conclusion		**30 m**	
Total minutes allocated to the Course		**1800 m**	**30 h**

Educational Components of the Curriculum

	Knowledge	Attitudes	Skills
Question	• The anatomy of a question • The Map • Basic clinical skills (H&P)	• Curiosity • Comfort with Uncertainty • Value Active Listening	• Formulate a Question
Searching	• MEDLINE • Understanding of search strategies (filters, etc.)	• Computer Phobia • Deal with aversion to these technologies	• Computer Literacy • Informatics • Tie question to specific information sources
Critical Appraisal	• Practical clinical epidemiology (User's Guides) • Survival Stats • Fatal Flaws (the hopeless to perfect scale)	• Innumeracy • Readiness to challenge authority (Challenge them to be critical, do not accept it as it must be so)	• Which article will answer your question • Apply these skills to real time settings
Application	• Getting the Individual Patient (NNT) • Going from pre-test to post-test probabilities (likelihood ratios) • Strength of inference	• The recognition that value judgements are implicit in every clinical decision • Judgements are being made all the time by physicians based on the MD's value system • Adding to the notion of patient's values when you go from evidence to practice • Readiness and willingness to change	• Solicit patient preferences • Assess co-morbidities and social support of patient • Assess where the patient's value system is on the paternalism to technical continuum

Course Title: Basic EBM skills for practicing clinicians.

Session: Module I: INTRODUCTION TO EBM.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
1. Define EBM	20 m 30 m	Definitions pertaining to EBM Limitations of current clinical practice Examples of Practice without best evidence. The failure of common sense Variations in current practice Managing medical information Decline of knowledge over time	Lecture Discussion	Data show PPT. Flip chart	*Define EBM by answering the Quiz at the end of the session. *List the limitations of current clinical practice.
2. Describe the importance of an evidence-based approach to clinical practice.	30 m	The argument for EBM Using the best evidence Improving common sense Reducing variation in practice Managing medical information Reversing the decline in medical knowledge	Discussion Lecture	Flip chart Data show PPT.	Describe the importance of EBM by answering the Quiz at the end of the session.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
3. Define Information mastery and its importance to the management of the medical literature	30 m 20 m 30 m	Definition of Validity, Relevance and Work Applying the usefulness equation Sources of medical information	Lecture Discussion	Data show PPT. Flip chart	Define Information mastery, validity relevance and work by answering the Quiz at the end of the session.
4. Definition of POEMs and DOEs	30 m	Definitions of POEMs and DOEs	Lecture Small group Exercise with different examples from the literature	PPT. Published POEMs & DOEs	Differentiating between POEMs & DOEs when given examples from the literature.

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Session: Module II: ASKING CLINICAL QUESTIONS.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
1. Define the importance of clinical questions for practicing clinicians	30 m	Introduction on adult learning. Questions asked by clinicians at point of patient care. Clinical questions and lifelong learning.	Lecture Discussion	Data show PPT. Flip chart	*List the importance of clinical questions for practicing physicians.
2. Create a well-formed clinical question.	30 m	Learning to ask focused PICO questions. Improve the ability to ask and answer questions	Lecture Small group Exercises	Data show PPT.	Form a PICO Question when given different clinical scenarios

Course Title: Basic EBM skills for practicing clinicians.

Session: Module III: SEARCHING FOR THE BEST EVIDENCE.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
1. List the characteristics of different study types	90 m	The characteristics of: Randomized controlled trials. Cohort studies Case controlled studies Longitudinal studies Cross-sectional studies Reviews.	Lecture Discussion Small group Exercise with different types of published materials	Data show PPT. Flip chart Published materials	*Define characteristics of different studies on answering the quiz at the end of the session. *Differentiate between different types of published materials.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
2. List the type of study required to answer each clinical situation.	30 m	Types of studies accepted for resolving different clinical situations.	Lecture Small group Exercises using published materials	Data show PPT. Published materials	*Define type of literature required to resolve specific clinical situations in the Quiz *Allocate published materials to their corresponding clinical situations.
3. Define the Priority of different questions according to certain criteria	15 m	Which question is more important to my patient's well being? Which question is most interesting? Which question is most feasible to answer within the time frame available? Which question are you likely to encounter again in your practice	Small group Exercises using different clinical situations	Flip chart	Correctly prioritize questions according to the pre-set criteria

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
4. Develop a search strategy	30 m	The five step search strategy: State the topic Break topic into key ideas Consider other descriptive terms Combine Terms Narrow Terms	Lecture Exercise using different clinical situations	Data Show PPT Flip-chart	Develop a proper search strategy pertaining to the clinical situation
5. Identify the web sites where relevant information may be sought	60 m	Using the complete collection of web sites, the participants will be asked to access the websites and search for literature articles pertinent to their search strategy.	Exercise using computer lab and internet access.	Computer lab facilities	Correctly access the web sites and retrieve the literature pertinent to the clinical situations

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
6. Develop skill in searching for relevant literature using the internet	120 m	Using different search engines, the participants will be asked to access the websites and search for literature articles pertinent to their search strategy.	Exercise using computer lab and internet access.	Computer lab facilities	Correctly retrieve the literature pertinent to the clinical situations through different search engines.

Course Title: Basic EBM skills for practicing clinicians.

Session: Module IV: Appraising Literature on Diagnosis.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
1. List the different reasoning methods used by physicians during the process of diagnosis.	30 min	Discuss types of reasoning used by physicians during the diagnostic process. ▪ Algorithmic : using flowcharts and algorithms ▪ Pattern-recognition :"instant recognition" of a disease ▪ Exhaustive : gathering every possible piece of data ▪ Hypothetic-deductive : generating and rejecting hypotheses as more data are collected	Lecture discussion	Power point presentation	List the different types of reasoning methods used by physicians during the process of diagnosis. Discuss the characteristics of each method
2. Identify the steps of evaluating literature dealing with diagnostic techniques.	60 min	Evaluating the quality of an article about diagnosis involves: determining the relevance of the results Determining the validity of the results.	Lecture discussion Small Group activity	Flip chart	Listing the steps of evaluation of literature dealing with diagnosis

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
3. Calculate sensitivity and specificity, positive and negative predictive values and likelihood ratios for different diagnostic tests.	60 min	Reviewing the definitions and the methods of calculation of prevalence, sensitivity, and specificity, positive and negative predictive values and likelihood ratios Examples Defining the terms SnNOut SpPIn	Lecture discussion Small Group activity	Flip chart	Calculating the sensitivity and specificity, positive and negative predictive values and likelihood ratios for different diagnostic tests when given examples from the literature.
4. Use the sensitivity and specificity, positive and negative predictive values and likelihood ratios in clinical decisions.	60 min	Clinical scenarios and examples	Lecture discussion Small Group activity	Flip chart	Use the sensitivity and specificity, positive and negative predictive values and likelihood ratios for different diagnostic tests when given a clinical scenario
5. Distinguish between tests that rule-in and rule-out disease.	30 min	Clinical scenarios and example articles from literature	Lecture discussion Small Group activity	Flip chart	Participation in classroom discussions and responding to oral questions.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
6. Appraise literature dealing with diagnostic tests using the worksheet	60 min	Using the worksheet, each participant will appraise an article dealing with a diagnostic test.	Presentation by participants and group discussions	Transparencies and overhead projector.	Properly appraising an article dealing with a diagnostic test using the work sheet.

Course Title: Basic EBM skills for practicing clinicians.

Session: Module V: Appraising Literature on Therapy.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
1. Identify pitfalls in common approaches to clinical decision-making.	30 min	Defining the characteristics of different approaches of clinical decision making	Lecture discussion	Data show power point presentation	Participation in classroom discussions and responding to oral questions.
2. Determine if a study about therapy is relevant and valid.	30 min	Using the work sheet, the relevance and validity of an example study about therapy	Exercise using the work sheet	Work sheets, Flip chart	Properly appraising an example article using the work sheet.
3. Analyze study results on an “intention to treat" basis.	30 min	Defining the concept of “intention to treat” and its importance in analysis of the studies dealing with therapy	Lecture discussion	Data show power point presentation	Participation in classroom discussions and responding to oral questions.
4. Distinguish between “relative risk reduction” and “absolute risk reduction”.	30 min	Defining the concept of relative and absolute risk, and the characteristics of each	Lecture discussion	Data show power point presentation	

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
5. Calculate the “number needed to treat” (NNT) in a study.	30 min	Calculation of the number needed to treat from a therapy study	Small-Group Activities	Worksheets Flip chart	Properly calculating the NNT in an example article using the work sheet.

Course Title: Basic EBM skills for practicing clinicians.

Session: Module VI: Appraising Literature on Prognosis.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
1. Formulate a precise question relevant to a prognosis study.	10 min 10 min	Introduction to studies about prognosis Formulating A PICO question for prognosis	Lecture discussion and small group activity	Data Show Power point presentation	Participation in classroom discussions and responding to oral questions. Answer the quiz correctly at the end of the session.
2. Understand what a cohort study is.	30 min	The details and characteristics of Cohort studies.	Lecture discussion	Data Show Power point presentation	
3. Understand what a case-control study is.	30 min	The details and characteristics of Case-control studies.	Lecture discussion	Data Show Power point presentation	
4. Determine if the study is relevant.	20 min	Evaluation of relevance of a prognosis study	Exercise using an example study and worksheet	Worksheets Flip charts	Properly appraising an example article using the work sheet.
5. Determine if the study is valid.	20 min	Evaluation of validity of a prognosis study	Exercise using an example study and worksheet	Worksheets Flip charts	

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
6. Appraise an article dealing with prognosis.	120 min	Using the worksheet, each participant will appraise an article dealing with prognosis.	Presentation by participants and group discussions	Transparencies and overhead projector.	Properly appraising an article dealing with prognosis using the work sheet.

Course Title: Basic EBM skills for practicing clinicians.

Session: Module VII: Appraising Literature on Integrative studies.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
1. Explain the steps of performing a meta-analysis: identification, selection, abstraction, and analysis.	20 min 20 min 20 min 30 min	Introduction to type of review articles The need for meta analysis The development of meta analyses over the years The four steps of the meta-analysis: Identification. Selection. Abstraction. Analysis.	Lecture discussion and small group activity	Data Show Power point presentation	Participation in classroom discussions and responding to oral questions. Answer the quiz correctly at the end of the session.
2. Distinguish between random and fixed effects models when reading a meta-analysis.	60 min	The definitions and differences between random and fixed effects models, and their influence on the results of meta-analyses.	Lecture discussion and small group activity	Data Show Power point presentation	Participation in classroom discussions Responding to oral questions. Answer the quiz correctly.

Learning Objective	Time	Contents	Classroom activity	A/V	Evidence of Mastery
3. Evaluate the relevance, validity and usefulness of a meta-analysis.	120 min	Steps of evaluation of relevance validity and usefulness using an example article and the worksheet	Exercise using an example study and worksheet	Worksheets Flip charts	Properly appraising a meta-analysis using the work sheet.
5. Critically appraise a simple meta-analysis.	120 min 60 min	Example meta-analysis appraisal Home-work: Choose a meta analysis for each participant to appraise at home and present the results on the next day.	Exercise using an example study and worksheet Presentation by participants and group discussions	Worksheets Flip charts Transparencies and overhead projector.	Properly appraising a meta-analysis using the work sheet.